1: Biochim Biophys Acta 1998 Nov 26;1443(1-2):193-7

A nonsymbiotic hemoglobin gene is expressed during somatic embryogenesis in Cichorium.

Hendriks T, Scheer I, Quillet MC, Randoux B, Delbreil B, Vasseur J, Hilbert JL.

Laboratory of Plant Breeding, Agricultural University Wageningen, P. O. Box 386, 6700 AJ Wageningen, The Netherlands.

After differential screening of a cDNA library corresponding to genes expressed during the early stages of somatic embryogenesis in leaf tissue from the Cichorium hybrid '474' (C. intybus L., var. sativumxC. endivia L., var. latifolia) a nonsymbiotic hemoglobin cDNA was obtained. Studies of the expression of the gene corresponding to this clone by Northern blot analysis suggest that in Cichorium a nonsymbiotic hemoglobin gene is specifically expressed under somatic embryogenesis-inducing conditions, and that its expression is not related to stress caused by wounding or tissue culture conditions.

PMID: 9838109 [PubMed - indexed for MEDLINE]

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Nonsymbiotic haemoglobins in plants.

Sowa AW, Guy PA, Sowa S, Hill RD.

Plant Breeding and Acclimatization Institute, Radzikow, Blonie, Poland.

General aspects regarding the presence of nonsymbiotic haemoglobin in plants are presented with the emphasis on those related to its function. As it becomes apparent that the nonsymbiotic haemoglobins are widespread across the plant kingdom and that they represent a more primitive and evolutionary older form of the plant globin genes, the question of their function becomes more attractive. While the physiological functions of the symbiotic haemoglobins in plants are well understood, almost nothing is known about their nonsymbiotic predecessors. Therefore, the known and hypothetical functions of haemoglobins in various systems are described along with information concerning properties and the regulation of expression of the nonsymbiotic haemoglobins. Interestingly, a number of nonsymbiotic haemoglobins have been shown to be hypoxia-inducible. The spatial and temporal pattern of this induction in barley may suggest that it is an integral part of the plants response to limiting oxygen stress.

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